

WHAT IS CLAIMED IS:

1. A reformer controlling apparatus, comprising:

a reformer having a catalyst unit including a catalyst promoting a steam reforming reaction and a catalyst for promoting a partial oxidation reaction;

5 a raw fuel gas supplier supplying raw fuel gas containing hydrocarbon and steam to said catalyst unit;

an oxidation gas supplier supplying oxidation gas containing oxygen to said catalyst unit;

a first reaction state detector detecting a state of a reaction progressing at an upstream portion of flows of said raw fuel gas and said oxidation gas in said catalyst unit;

10 a second reaction state detector detecting a state of a reaction in the whole of the catalysts in said catalyst unit;

a first corrector correcting feed amounts of said raw fuel gas and said oxidation gas, which are supplied to said catalyst unit, based on said state of the reaction detected by said second reaction state detector, and

15 a second corrector correcting the feed amount of said oxidation gas, which is supplied to said catalyst unit and/or a feed timing thereof, based on said state of the reaction detected by said first reaction state detector.

2. The reformer controlling apparatus according to claim 1, wherein said first reaction state detectors are set in plural positions, and a detection signal switcher is provided, which switches, with passage of time, a detection signal supplied to said second corrector among detection signals indicating said reaction state detected by said first reaction state detector.

3. The reformer controlling apparatus according to claim 1, wherein said first reaction state detector detects a temperature state as said reaction state.

4. The reformer controlling apparatus according to claim 1, wherein said first reaction state detector detects a reaction state at a spot of said catalyst unit where the maximum temperature is generated.

25 5. The reformer controlling apparatus according to claim 1, wherein said first reaction state detectors for detecting a temperature state are set in plural positions, a maximum temperature selector for selecting the highest temperature among detected temperatures output from the first reaction state detectors is provided, and said second corrector uses an output of the maximum temperature selector.

30 6. The reformer controlling apparatus according to claim 1, wherein said second reaction state detector detects a temperature state as said reaction state.

7. A reformer controlling apparatus, comprising:

35 a reformer having a catalyst unit including a catalyst for promoting a steam reforming reaction and a catalyst for promoting a partial oxidation reaction;

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raw fuel gas supplying means for supplying raw fuel gas containing hydrocarbon and steam to said catalyst unit;

5 oxidation gas supplying means for supplying oxidation gas containing oxygen to said catalyst unit;

first reaction state detecting means for detecting a state of a reaction progressing at an upstream portion of flows of said raw fuel gas and said oxidation gas in said catalyst unit;

10 second reaction state detecting means for detecting a state of a reaction in the whole of the catalysts in said catalyst unit;

first correcting means for correcting feed amounts of said raw fuel gas and said oxidation gas, which are supplied to said catalyst unit, based on said state of the reaction detected by said second reaction state detecting means; and

15 second correcting means for correcting the feed amount of said oxidation gas, which is supplied to said catalyst unit and/or a feed timing thereof, based on said state of the reaction detected by said first reaction state detecting means.

15. A method of controlling a reformer, comprising:

promoting a steam reform reaction and a partial oxidation reaction in a catalyst unit of said reformer;

supplying raw fuel gas containing hydrocarbon and steam to said catalyst unit by a raw fuel supplier;

20 supplying oxidation gas containing oxygen to said catalyst unit by an oxidation gas supplier;

detecting a state of a reaction progressing at an upstream portion of flows of said raw fuel gas and said oxidation gas in said catalyst unit by a first reaction state detector;

25 detecting a state of a reaction in the whole of the catalysts in said catalyst unit by a second reaction state detector;

correcting feed amounts of said raw fuel gas and said oxidation gas, which are supplied to said catalyst unit by a first corrector, based on said state of the reaction detected by said second reaction state detector; and

30 correcting the feed amount of said oxidation gas, which is supplied to said catalyst unit and/or a feed timing thereof by a second corrector, based on said state of the reaction detected by said first reaction state detector.